

## Multiple Choice Questions (MCQ):

### WHAT ARE MCQs?

Multiple choice questions (MCQs) are a form of assessment for which students are asked to select one or more of the choices from a list of answers.

### STRUCTURE OF MCQs

MCQ consists of a stem and a set of options. The *stem* is usually the first part of the assessment that presents the question as a problem to be solved; the question can be an incomplete statement which requires to be completed and can include a graph, a picture or any other relevant information. The options are the possible answers that the student can choose from, with the correct answer called the *key* and the incorrect answers called *distractors*.

**Example:**  
An outcome based student learning approach consists of 3 main elements, namely

a) Learning Outcomes, Learning Activities, Assessments  
b) Course contents, teaching methods, Exams  
c) Group work, Problem Based Learning, Assessments  
d) Educational Aims, New teaching concepts, Exams  
e) None of the above

STEM →  
KEY →  
DISTRACTOR →

Y	Declarative	<b>CHARACTERISTICS</b>
P	Functioning	
	Timely to Set	
	Timely to Answer	
	Timely to Correct	
	Timely to provide Feedback	
Y	Suitable for Large Class	
Y	Can substitute with Computers	
Y	Passive	
	Active	
	Process Oriented Method	
Y	Product Oriented Method	

Y	Yes
P	Possibly

Above shows the general characteristics of the assessment method and the type of skills that are *typically* assessed by the method. Both Blooms' taxonomy and Biggs' Solo taxonomy are indicated.

Y	Knowledge	<b>Blooms Level of Taxonomy</b>	<b>MEASURABLE QUANTITIES</b>
P	Comprehension		
Y	Application of Knowledge		
P	Analysis		
	Synthesis		
	Evaluative Skills		
Y	Pre-structural	<b>SOLO Taxonomy</b>	
Y	Uni-structural		
Y	Multi-Structural		
P	Relational Level	<b>Qualitative</b>	
	Extended Abstract Level		
	Leadership	<b>OTHER QUANTITIES</b>	
	Life long Skills		
	Creative skills		
	Writing Skills		
	Team Work		
	Communication Skills		
	Presentation Skills		
Y	Memorizing Skills		
	Practical/ Physical Skills		
	Think under pressure		
	Project Management		
	Time management		

### **ADVANTAGES OF MCQs**

- Good MCQs should be objective so there will be no ambiguity in marking due to subjective factors in the questions. Objective MCQs are easy to mark (a set of answer sheets is all required from the assessor) and thus do not require an experienced tutor to mark them.
- MCQs take less time to complete, with shorter assessment time required, more questions can be assessed. Feedback is fast.
- MCQs can be administered into on-line assessments, such as online assessments can be very effective, and can prompt correct answers directly after completion with clarification and reasoning on the answers.
- Factors irrelevant to the assessed material (such as handwriting and clarity of presentation) do not come into play in a multiple choice assessment, and so the candidate is marked purely on their knowledge of the topic. (Wikipedia accessed 13 Jun 08)
- MCQs have high reliability, validity and manageability.

### **DISADVANTAGES OF MCQs**

- MCQs are typically used for assessing knowledge only, students may often customize MCQs with rote learning. If assessors wish to use MCQs to assess deeper learning, careful attention (and many practices) on appropriate questions are required to administer.
- MCQs have a reputation of being easy and thus students tend to receive higher marks in comparison to other assessments such as essays, reports, presentations etc. This is likely because these assessments usually have a “glass ceiling” around the 80% mark. Care must be taken to design MCQs which have the same level of difficulty as other assessments. Obviously, students are unlikely to complain if they receive high marks in a formative MCQ assessment, but for summative assessment, if a different assessment method is used (which is usually the case), then students should be given clear assessment procedures and expectations. It is advisable to give practices on other assessments if such assessments are used for summative assessment.
- Guessing – with MCQs there is a possibility of guessing the correct answer, there are numerous methods to penalize students from guessing such as negative marking (not recommended as sometimes produce negative effects to students who know the answers), more options to answers, adopting mathematical strategies to normalise marks, given partial marks to an answer very near to the correct answer.
- MCQs cannot test oral or written skills, it can test only the theories.

### **HOW TO DESIGN GOOD MCQs?**

- When writing the stem, use clear, direct language, the stem should be clearly identifying the question. Avoid complex wordings which may confuse and frustrate students with sound understanding.
- Avoid using unnecessary and irrelevant material.
- You are not trying to catch your student out, so try not to use negatives, if negatives are used, highlight, bold or italic it.
- Put as much of the question in the stem as possible, rather than duplicating material in each of the options.
- Use only plausible and attractive alternatives as distractors.
- Avoid giving clues to the correct answer.



- If possible, avoid the choices "All of the above" and "None of the above". If you do include them, make sure that they appear as correct answers some of the time.
- Do bear in mind what you are trying to test, they should be aligned with the intended learning outcomes.
- Careful design questions will discourage rote learning.

## GRADING STANDARDS

MCQs do not require any specific grading standards or criteria as the answers are usually set and defined. Thus as long as the assessors have a set of answer sheets with the correct choices taken, MCQs can be easily assessed and graded. Negative marking can also be administered (but not recommended).

The following **Grading scheme** is often used for MCQs: (From WebCT)

- **Equally weighted:** This option will allocate an equal value to each answer. For example if the question is worth 20 points with four question and answer pairs, the student with two correct answers will be awarded 10 points and the student with 3 correct answers will get 15 points.
- **All or nothing:** The student must get all the matches correct for this question or they will receive a score of zero.
- **Right minus wrong:** The number of incorrect matches are subtracted from the correct matches to give the student a score. For example, in a question worth 30 points with three question and answer pairs, a student with two correct answers and one incorrect answer will be awarded ten points (20-10).

## WEB REFERENCES AND RESOURCES:

### MCQ Assessment

Computer Assisted Assessment Centre

[http://caacentre.lboro.ac.uk/resources/objective\\_tests/index.shtml](http://caacentre.lboro.ac.uk/resources/objective_tests/index.shtml)

Wikipedia

[http://en.wikipedia.org/wiki/Multiple\\_choice](http://en.wikipedia.org/wiki/Multiple_choice)

Learning and teaching in Action Vol.2 Issue 1: Assessment, Winter 2003, ISSN 1477-1241 ,  
Manchester Metropolitan University

<http://www.celt.mmu.ac.uk/ltia/issue4/higginstatham.shtml>

Teaching and Learning Centre, Murdoch University

<http://www.tlc.murdoch.edu.au/eddev/evaluation/mcq/mctests.html>

### Negative Marking

<http://web.uct.ac.za/projects/cbe/mcqman/mcqcont.html>



Times Higher Education, "What is the right choice?" 4 May 2001  
<http://www.timeshighereducation.co.uk/story.asp?storyCode=159581&sectioncode=26>

### **Tips for Students answering MCQs**

Study Guides and Strategies, Joe Landsberger  
<http://www.studygs.net/tsttak3.htm>

Academic Success Center, the George Washington University, Washing DC  
[http://gwired.gwu.edu/counsel/asc/index.gw/Site\\_ID/46/Page\\_ID/14561/](http://gwired.gwu.edu/counsel/asc/index.gw/Site_ID/46/Page_ID/14561/)

The College-Level Examination Program® (CLEP)  
[http://www.collegeboard.com/student/testing/clep/prep\\_hint\\_mc.html](http://www.collegeboard.com/student/testing/clep/prep_hint_mc.html)

### **To Reference these pages**

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Chan C (2008) *Assessment: Multiple Choice Questions*, Assessment Resource Centre, University of Hong Kong [<http://arc.caut.hku.hk/assMethod.html>]: Available: Accessed: DATE